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(54) Telescopic tube connection for a vacuum cleaner.

(57) This invention relates to a device for a vacuum cleaner which either comprises a hose (13) which is connected to a vacuum cleaner housing the outer end of which has a tube handle (12) or a hand held unit comprising a vacuum cleaner housing with an inlet tube the tube handle or the inlet tube being connected to a nozzle (10) by means of a tube shaft (11). The tube shaft (11) is movably arranged in or on the tube handle (12) or the inlet tube and can be locked in different positions

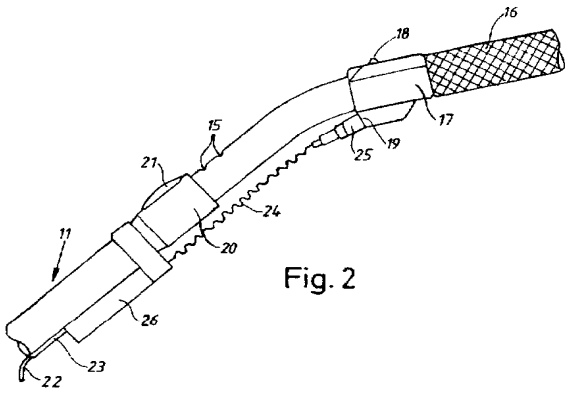

Fig. 2

EP 0 670 138 A2

This invention relates to a device for a vacuum cleaner which either comprises a hose connected to a vacuum cleaner housing the outer end of which has a tube handle or a hand held unit comprising a vacuum cleaner housing with an inlet tube, the tube handle or the inlet tube being connected to a nozzle or the like by means of a tube shaft.

Vacuum cleaners which are provided with a hose and a tube handle are common technique. In order to adapt the length of the tube shaft to the person who is handling this type of vacuum cleaner it is common to use tube shafts comprising an inner and an outer tube which can be moved and locked in different positions with respect to each other. Such devices are described for instance in EP 293518, 399177, 520534, 552481, 553482 and 537457. However, these devices are difficult to adjust during use depending on that the adjustment mechanism is placed far down on the tube shaft which means that the operator has to release his grip about the tube handle and use both hands for moving the parts of the tube shaft with respect to each other. Moreover, known tube shaft arrangements can not in a simple manner be provided with an electric conduit which is joined to the shaft and which connects a motor driven nozzle with the electric source of the vacuum cleaner because of the movement between the parts of the tube shaft.

Recently a new type of vacuum cleaner comprising a small hand held unit has been developed. This unit comprises a combination of a vacuum source driven by a fast running electric motor and a dust container which is connected directly to a tube shaft. This type of vacuum cleaners is described for instance in PCT/SE94/00002 and PCT/SE94/00003.

The purpose of this invention is to achieve a simple and cheap telescopic device for the types of vacuum cleaners mentioned above. The device according to the invention admits a comfortable adjustment of the length of the tube shaft and the adjustment can be effected during use without making it necessary for the operator to completely change the grip of the handle or the tube shaft. The arrangement also makes it possible to place an electric conduit directly on the tube shaft and in a simple way connect the conduit to a motor driven nozzle and an electric conduit placed on the hose. This is achieved by means of a device having the caracteristics mentioned in the claims.

An embodiment of the invention will now be described with reference to the accompanying drawing on which Fig. 1 in a side view shows the nozzle of a vacuum cleaner with associating parts according to the invention whereas Fig. 2 in a larger scale shows the connection between the tube shaft of the vacumm cleaner and the tube handle.

In the Figures 10 is a vacuum cleaner nozzle, for instance a motor driven nozzle, which via a tube shaft 11 is connected to a tube handle 12. The tube handle 12 is as usual connected to one end of a hose 13 whose other end is connected to a vacuum cleaner housing, not shown, comprising a dust container and a motor-fan unit.

The tube handle 12 comprises a front part 14 which is directed obliquely downwards towards the nozzle and which is inserted into the tube shaft 12. The front part has several recesses 15 the purpose of which will appear below. A rear part 16 of the tube handle is shaped as a handle whereas an intermediate section 17 has control means 18, if any, for the vacuum cleaner and an electric socket 19. The electric socket is via an electric conduit in the handle, hose and vacuum cleaner housing connected to the electric main supply.

The tube shaft 11 which has a diameter which is somewhat larger than the diameter of the front part 14 of the tube handle is telescopically slidable on the tube handle and has at its upper end a collar shaped section 20 which contains a locking means 21. This locking means is of conventional type and cooperates with the recesses 15 in such a way that the tube shaft 11 can be fixed in the different positions on the tube handle 12 which correspond to the positions of the recesses. The tube shaft also comprises an electric conduit 22 which is placed in a shell 23 at the outside of the tube shaft. The electric conduit at the lower part of the tube shaft may in a way not shown in detail be arranged to automatically be connected to a corresponding means on the nozzle when the nozzle is fastened to the tube shaft.

The upper part 22 of the conduit 22 is shaped as an elastic coil 24 to which a plug 25 is connected. This plug can be connected to the socket 19 but is normally stored in a holder 26 in the upper part of the tube shaft and the coil 24 is stored in a pocket in the holder. It should be mentioned that it is also possible to place the coil 24 at a lower part of the conduit and to use an upper linear conduit section extending out from the holder when the plug is connected to the socket. In such a case the pocket in the holder of course has to be somewhat extended in the downward direction.

The device is used in the following way. A conventional nozzle 10 or a motor driven nozzle is connected to the lower part of the tube shaft 11 after which the tube handle 12 is inserted into the tube shaft 11 and is fixed by means of the locking mechanism 21. If necessary the plug 25 is pulled out together with the coil 24 from the holder 26 and is connected to the socket 19 on the tube handle 12. When the vacuum cleaner is used the operator with one hand grasps the handle 16 whereas the other hand grasps the upper part of the tube shaft 11. If it is necessary to adjust the length of the tube shaft during use in order to get a comfortable working position the lower hand is moved slightly up towards the locking means 21 and activates it so that the tube shaft can be moved with respect to the tube handle thereby maintaining the grip of the upper

hand. If the plug 25 is connected to the socket 19 the electric conduit 22 during this telescopic movement 22 is still connected to the vacuum cleaner housing because of the flexibility of the coil 24. Thus, the adjustment is very easy to do.

By means of the suggested arrangement the advantage is also achieved that the tube shaft, even if it has a fixed shape which allows an electric conduit in a simple way to be arranged outside the tube shaft, together with the tube handle offers a possibility to adjust the distance between the nozzle and the handle.

It should be observed that it is within the scope of the invention to invert the arrangement i.e. to place the locking means on the tube shaft and to let the tube shaft move within the tube handle as well as it is possible to use other types of locking mechanisms for instance such where locking is achieved by turning a part of the tube shaft or the tube handle.

It is also possible within the scope of the invention to integrate the vacuum cleaner housing and the tube handle to a hand held unit with an inlet tube which corresponds to the front part 14 of the tube handle 12 this unit in a corresponding way being movable with respect to the tube shaft.

Claims

1. Device for a vacuum cleaner which either comprises a hose (13) which is connected to a vacuum cleaner housing the outer end of which has a tube handle (12) or a hand held unit comprising a vacuum cleaner housing with an inlet tube, the tube handle or the inlet tube being connected to a nozzle (10) or the like by means of a tube shaft (11), **caracterized in** that the tube shaft (11) is movably arranged in or on the tube handle (12) or the inlet tube and can be locked in different positions with respect to it.

2. Device according to claim 1, **caracterized in** that the tube handle (12), the inlet tube or the tube shaft (11) are provided with several recesses (15) or the like which cooperate with a locking means arranged on the tube shaft (11), the tube handle (12) or the inlet tube.

3. Device according to any of the preceding claims, **caracterized in** that an electric conduit (22) is fixed at the tube shaft (11) the upper end of the conduit being provided with a plug (25) for connection to a socket (19) arranged on the tube handle.

4. Device according to claim 3, **caracterized in** that the electric conduit (22) is provided with a coil shaped part (24).

5. Device according to claim 3 or 4, **caracterized in** that the upper end of the electric conduit (22) when not being used is placed in a holder (26) arranged on the tube shaft.

6. Device according to any of claims 3-5, **caracterized in** that the electric conduit (22) is placed outside the tube shaft (11).

7. Device according to any of claims 5 or 6, **caracterized in** that the holder (26) is provided with a pocket in which the coil shaped part (24) of the electric conduit normally is stored.

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EUROPEAN SEARCH REPORT

Application Number
EP 95 85 0030

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,X	EP-A-0 520 534 (OMEC SPA) * column 5, line 42 - column 9, line 20; figures *	1,2	A47L9/24
X	US-A-3 351 359 (J.T.FERRARIS) * column 2, line 61 - column 5, line 74; figures *	1,2	
X	DE-B-12 36 149 (DAYCO CO) * column 3, line 41 - column 6, line 6; figures *	3	
X	US-A-4 422 702 (E.E. NORDEEN) * column 3, line 32 - column 5, line 10; figures *	3	
A	EP-A-0 433 774 (PROGRESS ELEKTROGEREATE GMBH) * column 6, line 41 - column 10, line 3; figures *	3,4,6	
A	WO-A-86 01089 (PROGRESS-ELEKTROGEREATE MAUZ & PFEIFFER GMBH & CO) * claims; figures *	3,5-7	TECHNICAL FIELDS SEARCHED (Int.Cl.6) A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	9 February 1996	Vanmol, M

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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D : document cited in the application
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